## SEQUENCE LISTING

09/980845

<110> Handfield, Martin Brady, Jeannine Progulske-Fox, Ann Hillman, Jeffrey D.

JC10 Rec'd PCT/PTO 1 5 NOV 2001

- <120> Microbial Polynucleotides Expressed During Infection of a Host
- <130> MBHB00-505
- <140>
- <141>
- <150> 60/147,551
- <151> 1999-08-06
- <160> 20
- <170> PatentIn Ver. 2.1
- <210> 1
- <211> 849
- <212> DNA
- <213> Actinobacillus actinomycetemcomitans
- <220>
- <221> misc feature
- <222> (566)
- <223> N stands for any nucleotide.
- <220>
- <221> misc\_feature
- <222> (625)
- <223> N stands for any nucleotide.
- <220>
- <221> misc\_feature
- <222> (627)
- <223> N stands for any nucleotide.
- <220>
- <221> misc\_feature
- <222> (636)
- <223> N stands for any nucleotide.
- <220>
- <221> misc\_feature
- <222> (650)
- <223> N stands for any nucleotide.
- <220>
- <221> misc\_feature
- <222> (656)
- <223> N stands for any nucleotide.
- <220>
- <221> misc\_feature
- <222> (661)
- <223> N stands for any nucleotide.

```
<220>
<221> misc feature
<222> (672)
<223> N stands for any nucleotide.
<221> misc_feature
<222> (681)
<223> N stands for any nucleotide.
<220>
<221> misc feature
<222> (720)
<223> N stands for any nucleotide.
<220>
<221> misc_feature
<222> (723)
<223> N stands for any nucleotide.
<400> 1
gategegtaa aeggtgtaac aeggaaagca attgtttaat gteggeaaaa tgeageetg 60
tggtcggttc gtccagaata tacagggttt tgcccgtatc ccgtttggag agttccqtcq 120
ccagtttcac ccgttgcgct tccccgccgg acagggtggt aqaqqattqc cccaaqcqaa 180
tataagacaa gcccacgtca atcagggttt gcaatttacg cgcaatcatt ggaatggcat 240
cgaaaaactc gcgcgcatct tccaccgtca tgtccagcac ctgatgaatq gttttacctt 300
tgtageggat ttecagggtt tegegattgt aacgettgee tttacattgg tegeaaggea 360
cgtacacatc gggcaggaag tgcatttcca ctttgattac gccgtcgccc tggcaggctt 420
acagegeeeg cegegeaegt taaaactgaa acgeeeeggg ttataacege gegeaeggge 480
tttcggtacg ccggcaaaca attcgcgaat cggcgtgaat acgcccgtgt aagttgcccg 540
gttggagcgt ggcgtgcgtc caatcnggct ttggttaata tcaatacttt atcqaaaaat 600
tccaaacctt taatggactt gtacngngaa acctengeat tttctgcacn attaangegt 660
nttgtgcaat anggaacaaa ntgtcgttaa tcagtgtaga atttacctta accggacacn 720
congtgatgo aggtaaataa goocacggga atgtotaaat tgacgttttt caggttgtta 780
ccggaagcgc cgaacaattt gagcattttt ttcttatcaa gtgcggtacg ttttttcggt 840
atttcgatc
                                                                  849
<210> 2
<211> 357
<212> DNA
<213> Actinobacillus actinomycetemcomitans
<400> 2
gatcactaag ttgttcaatc ctttcgcttg ggaatctttg tctaaatacg gtttatgttg 60
cattgcgtta acgtctaaat cacctttaga cactgcagtg tttggcaagg cqtagtcatg 120
aataaaacgt attctacgtc taagttgtat ttttcttttg ccactttcgc tgcgatttca 180
gccacttggt gttccggtcc tgccatcacg cccactttga ttgttgccgg ggcttctgcc 240
gccggtttgt ctgccggtgc ggcttccggt tttttctctt cattacaagc ccgttaaggc 300
gaatacggag gctaatgttg cgacgcctaa taattttttt caagttcata aaagatc
<210> 3
<211> 886
<213> Actinobacillus actinomycetemcomitans
<220>
<221> misc_feature
<222> (554)
```

```
<223> N stands for any nucleotide.
<220>
<221> misc_feature
<222> (596)
<223> N stands for any nucleotide.
<400> 3
gatcaaactg gtggcgcaag ggcagcgcgt agcaaattta cccgatattt tggtctatqc 60
gegegtegge aacggcatgg tagggegacg cegtggttta aaccaagcca aageggaatg 120
gcgcttattt aagctaaaac accatcttgg cattcaggga tttttatccg ggctattcac 180
ttttgtcctg cgttccggtg ccagattatt gccgacatca ttactgaaaa acatctatca 240
aaccttttta agaaaataac atgatgaaat taaactgtat tttaaaaata tccggaattt 300
ccaccgcact ttttctagcg ggttgttcct caaattcaag tgcgccgacg caatcctctg 360
agcaggogaa ttotgttacg gotgtgaato coactgoggt gtacagtaag coccgcactt 420
tggataactt caacgattat gtgaatttct taaaaggtaa agcagcggca gaaggcgttt 480
ctgccgacgt attgaatgca caaaataata ttaattatat tcaaaaatcc qtqqatttqq 540
acgatcaaca agcnggcaga attcgcaagc gtgatccaaa tgccccgccg atcatnaatt 600
ccgaacggca cgaccaatta cttaaatcgt gtattaacca aqaataaagt aqacacggca 660
gaagcacgtt attgggaaca attgccgcag cttgaaaatg cttcaaagaa attcagcgta 720
ccgaaaaatt atctgttagc cttgtggggc atggagagta gctttggcta ttatcagggc 780
aattacgatg tgttatccac cttagccact cttgcttttg acggacgccg tgaagcctta 840
ttcagcaaag aattcatcgc cgccatgaaa atgctacagc gcgatc
<210> 4
<211> 507
<212> DNA
<213> Actinobacillus actinomycetemcomitans
<220>
<221> misc feature
<222> (4)
<223> N stands for any nucleotide.
<220>
<221> misc_feature
<222> (9)
<223> N stands for any nucleotide.
<220>
<221> misc_feature
<222> (21)
<223> N stands for any nucleotide.
<220>
<221> misc feature
<222> (23)
<223> N stands for any nucleotide.
<220>
<221> misc_feature
<222> (29)
<223> N stands for any nucleotide.
<220>
<221> misc_feature
<222> (32)
<223> N stands for any nucleotide.
<220>
```

```
<221> misc_feature
<222> (35)..(36)
<223> N stands for any nucleotide.
<221> misc_feature
<222> (39)
<223> N stands for any nucleotide.
<220>
<221> misc_feature
<222> (42)
<223> N stands for any nucleotide.
<220>
<221> misc_feature
<222> (45)
<223> N stands for any nucleotide.
<220>
<221> misc_feature
<222> (49)
<223> N stands for any nucleotide.
<220>
<221> misc_feature
<222> (52)
<223> N stands for any nucleotide.
<220>
<221> misc_feature
<222> (58)
<223> N stands for any nucleotide.
<220>
<221> misc feature
<222> (61)..(62)
<223> N stands for any nucleotide.
<220>
<221> misc_feature
<222> (65)
<223> N stands for any nucleotide.
<220>
<221> misc_feature
<222> (69)
<223> N stands for any nucleotide.
<220>
<221> misc_feature
<222> (73)
<223> N stands for any polynucleotide.
<220>
<221> misc_feature
<222> (97)
<223> N stands for any nucleotide.
<220>
<221> misc_feature
```

```
<222> (102)
<223> N stands for any nucleotide.
<220>
<221> misc_feature
<222> (138)
<223> N stands for any nucleotide.
<221> misc_feature
<222> (457)
<223> N stands for any nucleotide.
<220>
<221> misc feature
<222> (459)
<223> N stands for any nucleotide.
<220>
<221> misc feature
<222> (467)
<223> N stands for any nucleotide.
<400> 4
ttgntaccnt agccgctgac nanaactanc angcnntgna tnatntcgna tnattaanat 60
nnqcnaqqnq cancagctta cctttgccga cggttcnctg tntgaaagcg ccattcgcaa 120
agtgccggtg gaggcggnga aaattcactc acttggtgcg gaaggcaatg atgtgggatt 180
gaaagcccat catggcgggt ggataaagcg ttatttttta tgtcggcaga tgcctttcct 240
gcgttaaatg cgttattaga cgaaaatttt tcgtatcagg acacagcagt ttacggcgag 300
aattttgtgg tttccgcgct gaatgaagat tccgtgtgtg tgggcgatat ttatcaaatc 360
ggctcctgcg tggtggaggt gtcgcagccg cgtaaacctt gtgagcgctt atcgaaaaat 420
accaataatc cgaacacgca acaaaccgtg tacgctncng ctggtcnggc tggtatgtgc 480
                                                                   507
cggtggtacc ccaaggggga aattcaa
<210> 5
<211> 1087
<212> DNA
<213> Actinobacillus actinomycetemcomitans
<220>
<221> misc feature
<222> (622)
<223> N stands for any nucleotide.
<220>
<221> misc feature
<222> (642)
<223> N stands for any nucleotide.
<220>
<221> misc feature
<222> (661)
<223> N stands for any nucleotide.
<220>
<221> misc_feature
<222> (669)
<223> N stands for any nucleotide.
<220>
```

```
<221> misc feature
<222> (685)
<223> N stands for any nucleotide.
<221> misc feature
<222> (690)
<223> N stands for any nucleotide.
<220>
<221> misc feature
<222> (700)
<223> N stands for any nucleotide.
gatcgcaaca agcgcagttt ctatatttcc gccgcccgca gtgagatttt caatttaatc 60
gttgccaaac gtattgaact cagtctggcg cagcaggtct taaatggaga cgttttgcaa 120
ctgaacggtt cgcacagttg gtttgtggcg gacgcatcgg aagatttgac gcaactgcaa 180
agtgcggtgg attttgagaa tgaaattttt gtcgcgcacc aagccttgtt ccatttgatg 300
cggcaagaac gcgtgaaagc cgcccgccgt ccgattttaa tgcaggcgca acagtttcaa 360
tggcaatttg aaccgaacgg tttgcgcctt aaattttatt tgccggcagg cagttacgcc 420
acggcgttgg tacgcgagct ggtgaatgtt gaaaactgaa aaacgagaag aaaaacagga 480
ataacaagaa catgaatatt ttattaagta acgatgacgg cattcacgcg ccgggcattc 540
gtgtgatggc agaacattgc gtaagattgc caatgtgacc atcgtcgcgc cggacagcaa 600
ccgcaagcgc cgccttcagt tncttaacct tggtgaagcc gntgtattcc gttcatttgg 660
naaageggng attattgegt caacngcacn ceeggeggan tgegtgeata ttgeeetgac 720
gggttttctt tccgggcgca tcgatttggt gatttccggc atcaacgccg gggcgaacct 780
qqqcqatqat qtqctatatt ccqqcacqqt cqcqqcaqca tttqaaqqqc qtcatctqqq 840
cttgccqtct attqcqqtat cqctcqatqq tcqtcaacat tttqaaacqq cqqcqcgcgt 900
ggtatgcgat ttggtgccga aattacacgc ccaattatta ggcaaacacg aaattctgaa 960
tattaacqtq cccqatqtqc cttacqaaqa actqaaaqqc attaaaqtqt qccatttggg 1020
ctaccgttct tccgcttctq aagtgattaa acagcaaagc ccgcgtggcg aagacatgta 1080
ttggatc
<210> 6
<211> 681
<212> DNA
<213> Actinobacillus actinomycetemcomitans
<220>
<221> misc feature
<222> (609)
<223> N stands for any nucleotide.
<220>
<221> misc feature
<222> (614)
<223> N stands for any nucleotide.
<220>
<221> misc_feature
<222> (651)
<223> N stands for any nucleotide.
<220>
<221> misc feature
<222> (665)
<223> N stands for any nucleotide.
```

```
<400> 6
gatetgeegt tggegaacce ttacgaaatg etgateeteg egtecategt ggaaaaagaa 60
accggcattq ctqcaqaacg cccacaagtg gcgtcggtat tcattaatcg gttaaaagcc 120
aaaatgaagc tgcaaaccga tccgaccgtc atttacggca tgggcgacga ctacaacggc 180
aatattcqca aaaaagattt ggaaacgcca acgccttata acacctatgt gattgacggc 240
ttgccgccga caccgattgc gatgccgagt gaagaggcgt tacaggcggt ggcacatccg 300
gcgcaaacgg cqttttatta tttcgtggca gacggcacgg ggggacacaa attcagtcgt 360
aatttaaacg aacataacaa agcggtgcag caatatttgc gctggtaccg cgaacaaaac 420
ggaaaataat atggtaggca aatttattgt cattgaaggc ttggaaggcg caggcaaaag 480
caccgctcat caatgcgttg tggatacgtt aaaaacgtta ggtgttgggg aagtcatctc 540
tacccgcgag ccgggcggca cacccgttgg cggaaaagct acgccatctc attaaacatg 600
aaaaccaana gccngtgacc cgataaagcg gaattactca tgctgtatgc ngccgcctgc 660
aattngtggg aaaatgtgat c
<210> 7
<211> 822
<212> DNA
<213> Actinobacillus actinomycetemcomitans
<221> misc feature
<222> (532)
<223> N stands for any nucleotide.
<220>
<221> misc feature
<222> (630)
<223> N stands for any nucleotide.
<220>
<221> misc_feature
<222> (696)
<223> N stands for any nucleotide.
<220>
<221> misc_feature
<222> (710)
<223> N stands for any nucleotide.
<220>
<221> misc feature
<222> (722)
<223> N stands for any nucleotide.
<220>
<221> misc_feature
<222> (725)
<223> N stands for any nucleotide.
<400> 7
gatcgataaa aatcagcaag gcaaccactc ttaacaagaa ttgccatacc gtccaatatc 60
gtcgccaata ctgaatcgcg tagagcatgg ctaacgcaat catagcgcgt aaagtcggaa 120
tagcaagccc cgccagttgg ctgtataaca acgcaaaaat gaatccgcac agaatcggaa 180
atgtcgggct gatgtaacgc gtcggcaagg caaattgcag tagacgcgcc aaggtaaaac 240
ccaqcatcat cgccagtccg atatgcagcc ctgaaatggc aattaaatgc gccgtatttg 300
ttttttgata aatttgccaa gttttttggt ctaagcggaa acgttcgcca aaaccgagtg 360
ccagcaacaa gccttgtcgg ggtaaattct ccgtttgttg taaggcttga ttgagagcgg 420
tttggcgtaa cgaaaaaacg ttttccaatt tgaccgcact tttaatctct gcccaagcgg 480
tgatgtgctt gccgaaatac catggctggc ggtcaaaacc gtcaaaattc angcgggaag 540
aaagcgctcg caagcgtaaa ttgcctgcgt aacgttcgcc cggggttgac tggttgcttg 600
```

```
agtttccatt gcgcgtaaat acgttgttcn gggaagattt tcggcgaagt tttggcgccg 660
aataacccag gggttggata atgctgctga tgccanaaat ttccttgacn ggtaaatttc 720
enggnggaac gggttttegg eggcagattg geaagattat eegeetgggt eagtatggaa 780
attgccgatt ggtggacgta agcggactga atcatcaaga to
                                                                  822
<210> 8
<211> 949
<212> DNA
<213> Actinobacillus actinomycetemcomitans
<220>
<221> misc feature
<222> (538)
<223> N stands for any nucleotide.
gatcaggttg ccgtaaccgc gtaaggcgtt acccgcgtaa accactcgac ctgcggcggc 60
ggcattgact gcttgtctgc gagaaccact gatgtcgatg cctttgttac cgccgtcggc 120
gttagagaaa ccttgaatca cattgccgtt ggtcggccag cgccatgcca cgttggatac 180
tgccggtgcg gtgcccgctt gggttatcgg ctgattggtt gccggtgcag cagtacctac 240
gccggcttta atcgggccgg taatcgtgcc gtcggaacca tattgtgtgc cgtttgcgcc 300
cggggtgtaa gttacggtcg gttcaccacc ttgcgtagcc ggttgggtga ccgtcggttg 360
cattiggggt geagettteg titigeaccgt aaccgttgtg cegeggetea cetttaaggt 420
ttqtccqacq cttaagctqt aaggttcgga catattattc aacgccgcca attctttcac 480
atccaaacca gaaatgtagg cgataaggaa catggtgtca cctttgcgta cggtatangt 540
ttcacctttq taqaaacctt tqttqatttq gctgtaatcc ggtgcgttag tggtcgggtt 600
acctqqaatq qtqaaatctt qqqatqcctg ttqcgggtga attttccccg qcaqgttggg 660
tttgcttaac ccggttgtgc tttgcaatgc aaactgttga tacatcggtt gaaaaatcgg 720
ctgcggagta gattgtgcgc cggtcgcctg tagattgttc gactgggcaa tcggaccqtt 780
categaageg ggtacattge ettgttggat ttgeggttee catgtgetat tgeegecate 840
ggttgaaccg tccaccggtt gcatgagtcc cggggataag gtaccgtcgg cgttttccac 900
cggtgccggt gtattcgaag tacaggccgc taacacggca atgctgatc
                                                                  949
<210> 9
<211> 277
<212> DNA
<213> Actinobacillus actinomycetemcomitans
<400> 9
agagaaaaaa ccggaagccg caccggcaga caaaccggcg gcagaagccc cggcaacaat 60
caaagtgggc gtgatggcag gaccggaaca ccaagtggct gaaatcgcag cgaaagtggc 120
aaaaqaaaaa tacaacttaq acqtaqaata cqttttattc atgactacqc cttqccaaac 180
actgcagtgt ctaaaggtga tttagacgtt aacgcaatgc aacataaacc gtatttagac 240
                                                                  277
aaagattccc aagcgaaagg attgaacaac ttagtga
<210> 10
<211> 259
<212> DNA
<213> Actinobacillus actinomycetemcomitans
<400> 10
gatcaaactg gtggcgcaag ggcagcgcgt agcaaattta cccgatattt tggtctatgc 60
gegegtegge aaeggeatgg tagggegaeg eegtggttta aaecaageea aageggaatg 120
gcgcttattt aagctaaaac accatcttgg cattcaggga tttttatccg ggctattcac 180
ttttgtcctg cgttccggtg ccagattatt gccgacatca ttactgaaaa acatctatca 240
aaccttttta agaaaataa
```

```
<210> 11
<211> 459
<212> DNA
<213> Actinobacillus actinomycetemcomitans
<400> 11
gatcgcaaca agcgcagttt ctatatttcc gccgcccgca gtgagatttt caatttaatc 60
gttgccaaac gtattgaact cagtctggcg cagcaggtct taaatggaga cgttttgcaa 120
ctgaacggtt cgcacagttg gtttgtggcg gacgcatcgg aagatttgac gcaactgcaa 180
agtgcggtgg attttgagaa tgaaattttt gtcgcgcacc aagccttgtt ccatttgatg 300
cggcaagaac gcgtgaaagc cgcccgccgt ccgattttaa tgcaggcgca acagtttcaa 360
tggcaatttg aaccgaacgg tttgcgcctt aaattttatt tgccggcagg cagttacgcc 420
acggcgttgg tacgcgagct ggtgaatgtt gaaaactga
<210> 12
<211> 596
<212> DNA
<213> Actinobacillus actinomycetemcomitans
<220>
<221> misc feature
<222> (131)
<223> N stands for any nucleotide.
<220>
<221> misc_feature
<222> (151)
<223> N stands for any nucleotide.
<220>
<221> misc feature
<222> (170)
<223> N stands for any nucleotide.
<220>
<221> misc feature
<222> (178)
<223> N stands for any nucleotide.
<220>
<221> misc feature
<222> (194)
<223> N stands for any nucleotide.
<220>
<221> misc feature
<222> (199)
<223> N stands for any nucleotide.
<220>
<221> misc feature
<222> (209)
<223> N stands for any nucleotide.
<400> 12
atgaatattt tattaagtaa cgatgacggc attcacgcgc cgggcattcg tgtgatggca 60
gaacattgcg taagattgcc aatgtgacca tcgtcgcgcc ggacagcaac cgcaagcgcc 120
gccttcagtt ncttaacctt ggtgaagccg ntgtattccg ttcatttggn aaagcggnga 180
ttattgcgtc aacngcacnc ccggcggant gcgtgcatat tgccctgacg ggttttcttt 240
```

```
ccgggcgcat cgatttggtg atttccggca tcaacgccgg ggcgaacctg ggcgatgatg 300
tgctatattc cqqcacqqtc gcggcagcat ttgaagggcg tcatctgggc ttgccgtcta 360
ttgcggtatc gctcgatggt cgtcaacatt ttgaaacggc ggcgcgcgtg gtatgcgatt 420
tggtgccgaa attacacgcc caattattag gcaaacacga aattctgaat attaacgtgc 480
ccgatgtgcc ttacgaagaa ctgaaaggca ttaaagtgtg ccatttgggc taccgttctt 540
ccgcttctga agtgattaaa cagcaaagcc cgcgtggcga agacatgtat tggatc
<210> 13
<211> 429
<212> DNA
<213> Actinobacillus actinomycetemcomitans
<400> 13
gatctgccgt tggcgaaccc ttacgaaatg ctgatcctcg cgtccatcgt ggaaaaagaa 60
accggcattg ctgcagaacg cccacaagtg gcgtcggtat tcattaatcg gttaaaagcc 120
aaaatgaagc tgcaaaccga tccgaccgtc atttacggca tgggcgacga ctacaacggc 180
aatattcgca aaaaagattt ggaaacgcca acgccttata acacctatgt gattgacggc 240
ttgccgccga caccgattgc gatgccgagt gaagaggcgt tacaggcggt ggcacatccg 300
qcqcaaacqq cqttttatta tttcqtqgca gacqgcacqg ggggacacaa attcaqtcqt 360
aatttaaacq aacataacaa aqcggtgcag caatatttgc gctggtaccg cgaacaaaac 420
ggaaaataa
<210> 14
<211> 162
<212> DNA
<213> Actinobacillus actinomycetemcomitans
<400> 14
atggtaggca aatttattgt cattgaaggc ttggaaggcg caggcaaaag caccgctcat 60
caatgcgttg tggatacgtt aaaaacgtta ggtgttgggg aagtcatctc tacccgcgag 120
cegggeggea caccegttgg eggaaaaget aegecatete at
                                                                   162
<210> 15
<211> 67
<212> PRT
<213> Actinobacillus actinomycetemcomitans
<400> 15
Glu Lys Lys Pro Glu Ala Ala Pro Ala Asp Lys Pro Ala Ala Glu Ala
                                     10
                  5
Pro Ala Thr Ile Lys Val Gly Val Met Ala Gly Pro Glu His Gln Val
Ala Glu Ile Ala Ala Lys Val Ala Lys Glu Lys Tyr Asn Leu Asp Val
                             40
                                                 45
Glu Tyr Val Leu Phe Met Thr Thr Pro Cys Gln Thr Leu Gln Cys Leu
                         55
     50
Lys Val Ile
 65
<210> 16
<211> 85
<212> PRT
<213> Actinobacillus actinomycetemcomitans
```

<400> 16

Ile Lys Leu Val Ala Gln Gly Gln Arg Val Ala Asn Leu Pro Asp Ile 1 5 10 15

Leu Val Tyr Ala Arg Val Gly Asn Gly Met Val Gly Arg Arg Gly
20 25 30

Leu Asn Gln Ala Lys Ala Glu Trp Arg Leu Phe Lys Leu Lys His His  $35 \hspace{1cm} 40 \hspace{1cm} 45$ 

Leu Gly Ile Gln Gly Phe Leu Ser Gly Leu Phe Thr Phe Val Leu Arg
50 55 60

Ser Gly Ala Arg Leu Leu Pro Thr Ser Leu Leu Lys Asn Ile Tyr Gln 65 70 75 80

Thr Phe Leu Arg Lys
85

<210> 17

<211> 152

<212> PRT

<213> Actinobacillus actinomycetemcomitans

<400> 17

Asp Arg Asn Lys Arg Ser Phe Tyr Ile Ser Ala Ala Arg Ser Glu Ile 1 5 10 15

Phe Asn Leu Ile Val Ala Lys Arg Ile Glu Leu Ser Leu Ala Gln Gln 20 25 30

Val Leu Asn Gly Asp Val Leu Gln Leu Asn Gly Ser His Ser Trp Phe 35 40 45

Val Ala Asp Ala Ser Glu Asp Leu Thr Gln Leu Gln Gln Arg Leu Ala
50 60

Gln Arg Asp Ile Leu Leu Thr Ala Pro Leu Ile Gly Glu Glu Asp Lys
65 70 75 80

Ser Ala Val Asp Phe Glu Asn Glu Ile Phe Val Ala His Gln Ala Leu 85 90 95

Phe His Leu Met Arg Gln Glu Arg Val Lys Ala Ala Arg Arg Pro Ile 100 105 110

Leu Met Gln Ala Gln Gln Phe Gln Trp Gln Phe Glu Pro Asn Gly Leu 115 120 125

Arg Leu Lys Phe Tyr Leu Pro Ala Gly Ser Tyr Ala Thr Ala Leu Val 130 135 140

Arg Glu Leu Val Asn Val Glu Asn 145 150

<210> 18

<211> 198

<212> PRT

```
<213> Actinobacillus actinomycetemcomitans
<220>
<221> UNSURE
<222> (43)
<223> Xaa stands for any amino acid.
<220>
<221> UNSURE
<222> (50)
<223> Xaa stands for any amino acid.
<220>
<221> UNSURE
<222> (59)
<223> Xaa stands for any amino acid.
<220>
<221> UNSURE
<222> (66)
<223> Xaa stands for any amino acid.
<220>
<221> UNSURE
<222> (69)
<223> Xaa stands for any amino acid.
Met Asn Ile Leu Leu Ser Asn Asp Asp Gly Ile His Ala Pro Gly Ile
Arg Val Met Arg Thr Leu Arg Lys Ile Ala Asn Val Thr Ile Val Ala
             20
Pro Asp Ser Asn Arg Lys Arg Arg Leu Gln Xaa Leu Asn Leu Gly Glu
Ala Xaa Val Phe Arg Ser Phe Gly Lys Ala Xaa Ile Ile Ala Ser Thr
Ala Xaa Pro Ala Xaa Cys Val His Ile Ala Leu Thr Gly Phe Leu Ser
Gly Arg Ile Asp Leu Val Ile Ser Gly Ile Asn Ala Gly Ala Asn Leu
                 85
                                     90
Gly Asp Asp Val Leu Tyr Ser Gly Thr Val Ala Ala Ala Phe Glu Gly
Arg His Leu Gly Leu Pro Ser Ile Ala Val Ser Leu Asp Gly Arg Gln
                            120
His Phe Glu Thr Ala Ala Arg Val Val Cys Asp Leu Val Pro Lys Leu
                        135
His Ala Gln Leu Leu Gly Lys His Glu Ile Leu Asn Ile Asn Val Pro
                                        155
Asp Val Pro Tyr Glu Glu Leu Lys Gly Ile Lys Val Cys His Leu Gly
                165
```

Tyr Arg Ser Ser Ala Ser Glu Val Ile Lys Gln Gln Ser Pro Arg Gly
180 185 190

Glu Asp Met Tyr Trp Ile 195

<210> 19

<211> 142

<212> PRT

<213> Actinobacillus actinomycetemcomitans

<400> 19

Asp Leu Pro Leu Ala Asn Pro Tyr Glu Met Leu Ile Leu Ala Ser Ile 1 5 10 15

Val Glu Lys Glu Thr Gly Ile Ala Ala Glu Arg Pro Gln Val Ala Ser 20 25 30

Val Phe Ile Asn Arg Leu Lys Ala Lys Met Lys Leu Gln Thr Asp Pro 35 40 45

Thr Val Ile Tyr Gly Met Gly Asp Asp Tyr Asn Gly Asn Ile Arg Lys
50 55 60

Lys Asp Leu Glu Thr Pro Thr Pro Tyr Asn Thr Tyr Val Ile Asp Gly 65 70 75 80

Leu Pro Pro Thr Pro Ile Ala Met Pro Ser Glu Glu Ala Leu Gln Ala 85 90 95

Val Ala His Pro Ala Gln Thr Ala Phe Tyr Tyr Phe Val Ala Asp Gly
100 105 110

Thr Gly Gly His Lys Phe Ser Arg Asn Leu Asn Glu His Asn Lys Ala 115 120 125

Val Gln Gln Tyr Leu Arg Trp Tyr Arg Glu Gln Asn Gly Lys 130 135 140

<210> 20

<211> 54

<212> PRT

<213> Actinobacillus actinomycetemcomitans

<400> 20

Met Val Gly Lys Phe Ile Val Ile Glu Gly Leu Glu Gly Ala Gly Lys
1 5 10 15

Ser Thr Ala His Gln Cys Val Val Asp Thr Leu Lys Thr Leu Gly Val

Gly Glu Val Ile Ser Thr Arg Glu Pro Gly Gly Thr Pro Val Gly Gly 35 40 45

Lys Ala Thr Pro Ser His 50